

## 3330 PANGRAMS

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A pangram is a set of words in which each letter of the alphabet appears exactly once. Various people, including such distinguished mathematicians as the English logician Augustus De Morgan and the American information theorist Claude Shannon, have searched for pangrams that can be arranged in a meaningful sentence, but all efforts have required extensive explanations of the message the sentence is attempting to convey. In view of these difficulties, it seems prudent to abandon this additional requirement, regarding a pangram as a list of words and nothing more.

To avoid trivialization of the pangram problem, the additional requirement is imposed that each word in the pangram must contain at least two letters. Otherwise, the pangram constructor can get rid of difficult letters such as Q or Z by noting that each letter of the alphabet can be regarded as a word.

How many different pangrams are possible? Very few are found in the literature of recreational linguistics; therefore, it may be somewhat surprising to the average person that thousands of pangrams can be constructed. Using a computer tape of words in Webster's Second Edition prepared by the Air Force in the 1960s, Dennis Ritchie of Bell Telephone Laboratories programmed a computer to search for pangrams and came up with 3330 of them! Many more are possible, for the Air Force tape omits most Websterian words (below the line) that are variant spellings, Biblical names, or reformed spellings - including such prime pangrammatic possibilities as *qvint* (var. of *kvint*), *suq* (var. of *sooq*), *wuz* (dial. var. of *was*), and *waqf* (var. of *wakf*).

Specifically, Ritchie gave the computer two tasks: 1) generate a list of pangrams consisting of words of two or more letters using all 26 letters; 2) generate a list of pangrams consisting of the isolated letter S plus words of two or more letters using the remaining 25 letters. The latter list can be converted to a legitimate pangram list by using the letter S as a plural or a verb ending on one of the other words. He found 2005 pangrams of the former type and 1325 of the latter; no attempt has been made to determine the actual number of different pangrams possible by alternative assignments of the letter S.

This article describes various characteristics of this pangram list, recognizing that the results are critically dependent upon the stock of words used to form pangrams. For example, consider the number of words needed to form a pangram: there are 104 pan-

grams of six words and 3226 pangrams of seven words, but if the single word *cwm* is banned from the stockpile, there are only 250 pangrams left, of which 92 contain six words, and 158 contain seven words. On the other hand, if the word *suq* is added, it is easy to find the eight word pangram *cwm nth verd suq jib folk gyp zax*, and Dmitri Borgmann has used *wuz* and *qvint* to find the five word pangram *qvint wuz jackbox phlegm fyrds*.

*Cwm* is by far the most prevalent word in the list of pangrams, occurring in 92 per cent of them; other common words are *qoph* (65 per cent) and *jynx* (52 per cent). In fact, 44 per cent of the pangrams contain all three of these words! Four additional words (*qung*, *shoq*, *vext* and *vex*) appear in at least ten per cent of the pangrams. On the other hand, some words appear in only one pangram in the entire list.

Because *Q* ordinarily requires two vowels to follow it, there are very few *Q*-words suitable for pangrams. 3307 of the 3330 pangrams use either *qoph*, *shoq*, *qung* or *qursh*; the remaining 23 are scattered among *squdgy* (12 examples), *quiz* (4 examples), and *squdge*, *squab*, *quab*, *quak*, *quark*, *squark* and *quink*.

Unless the pangram has only six words, including a *Q*-word which uses only one vowel, it is clear that one or more words of the pangram must be vowelless (no AEIOUY). The great scarcity of vowelless words in Webster's accounts for the heavy use of *cwm* alluded to earlier. *Crwth* appears in 166 pangrams, and *nth* in 11 (always in conjunction with *cwm*). There are 84 pangrams in which all the words have at least one vowel.

Despite the great overlap in words, it is possible to locate a set of five pangrams with no words in common:

*shoq fjeld vug zink pyx brat cwm*  
*Qung fjord vext biz swack lymph*  
*qursh Jynx veldt zimb gowf pack*  
*qoph jambs vex Fritz wynd gluck*  
*squdgy job vamp knez flix crwth*

Surprisingly, the Borgmann pangram cited earlier has no word in common with any of these.

The longest word appearing in any pangram of the list is the eight-letter *schmaltz*, and the second longest is *bashlyk*:

*job Qung verd schmaltz pyx fowk*  
*fjord Qung vext zip bashlyk cwms*

No pangram is entirely in Webster's Pocket Dictionary; the closest one is *fjord quiz vex balks nth gyp cwm*, lacking only the last word. (Note that the letter *S* can be appended to several other words, leading to minor variations.) A small number of pangrams, however, are entirely in Webster's Collegiate Dictionary:

*jab qoph vug Fritz lynx desk cwm*  
*jug qoph vex blitz fry dank cwms*

jug qoph vex blintz fard sky cwm  
 jug qoph vex Fritz bland sky cwm  
 fjord quiz vex balk gyp nth cwms

fjeld qursh vat zig pyx knob cwm  
 junk qoph vex Fritz by glad cwms  
 junk qoph vex blitz dry fag cwms  
 junk qoph vex blitz fry gad cwms  
 jag qoph vex blitz fry dunk cwms

jag qoph vex blitz dry funk cwms  
 jag qoph vex blintz fry dusk cwm  
 jib qoph vug zed kraft lynx cwms  
 Jud qoph vex blintz fry skag cwm

The last pangram contains Jud, a short form of Judson which (like Fritz) appears in the given names appendix of the Collegiate; the word **skag** is not in the Seventh Edition of the Collegiate, but can be found in the Pocket Dictionary.

### LOANWORDS INDEX

Lovers of weird words such as *zdrávstvuite*, *ceol meadhonach*, *aladzha*, *tsetumlt* and *oy-oy-oy* will revel in this volume, which lists more than 14,000 words or phrases that have appeared in English but not been fully assimilated. Nineteen sources were consulted, ranging from such obvious ones as *Dictionary of Foreign Phrases and Abbreviations* to highly specialized vocabularies such as *The Language of Ballet*. The author confesses in the Foreword to the difficulty of deciding whether or not a loanword has been assimilated into English, and admits that he has erred on the side of inclusion. More than 100 languages are represented, including such oddities or hybrids as Old Flemish, French + Norwegian, and pseudo-Irish, but the distribution of words from these is highly skewed. On the one hand, at least 12,000 words come from French, Italian, Latin, German, Yiddish and Spanish (in decreasing order), but 39 languages have only one specimen each (from African hoodoo to Zulu *assegai*)! Be warned that this is an index, not a dictionary; no definitions are given, though sources are cited. It is available for \$55 from the Gale Research Company, Book Tower, Detroit MI. No doubt etymological examples can be mined: I noted the German *tiEFGespannt*, matching *trEFGordd* as an EFG trigram, and the Yiddish *l'haVDil* replaces the reformed spelling *heaVD*.